| | | | | RALPH B BRICK | | | | | | 5 2 954672 P.04 | | | | | | |
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| | <i>)</i> .: | and with | the a | ir frazier perme | bility of | said three | e layered | media be | ing ox | pressed | by t | no for | nula: | | ! !] | |
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| | | ; (C | laira | 19, amend to re | ad as foll | ows: | | , | | | | | : : | : 4 | | |
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| | 0,\ | subseque | ent jx | re size after be | ing proce | ssed and | bonded; | collectin | at le | ast a sec | ond | indep | ende | ht ! | 1 1 1 1 | |
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P.05

in overlying face-to-face thicknesses relation with said first measured thickness weight of chopped fibers, said second measured thickness weight of chopped fibers being of selected denier and pore size different from said denier and pore sizes of said first measured thickness weight of chopped fibers with said fibers of one independent thickness being finer than said fibers of said other independent thicknesses; passing said first and second measured thickness weights to a carding zone to open and align said chopped fibers in each said successively joined filter media thicknesses having face-to-face relationship to maximize particulate dirt holding capacity and to increase efficiency with the thicknesses being calculated with an arrangement including factors of thicknesses, pore and fiber sizes of each layer to take in to account the differences in thicknesses, porosity, pore and fiber sizes between layers with said porosity in such an arrangement comprising the ratio of pore volume to the total volume of filter media so that the overall average pore size of that of successive face-to-face thicknesses is smaller than that of the average overall pore size of the independent finest fiber thicknesses.

Claim 27, amend to read as follows:

27.) (Second Amendment)

A method of manufacturing multi-layered filter

media comprising: collecting in a mixer-blender zone at least a first and second layer of chorped fibers in separate independent thickness layers, each layer of filter media being of measured weight with at least one layer being of low melt fibers with said fibers of one independent layer being finer than said fibers of said other independent layer fibers; passing each layer through a carding zone including separate successive carding zone sections for each to open and align the fibers of each layer and to position the first and second layers in adjacent face-to-face relation; passing said adjacent face-to-face layers to a heating zone of sufficient heat to melt bind said

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of thicknesses, pore and fiber sizes of each layer to take in to account the differences in thickness, porosity, pore and fiber sizes between layers with said porosity in such an arrangement comprising the ratio of pore volume to the total volume of filter media so that the overall average pore size of the majority of pores of combined adjacent successive layers is smaller than that of the average overall pore size of the majority of pores of said independent finest fiber thickness layer calculated by formulas expressed:

$$\frac{1}{M} = \varepsilon_i \varepsilon_i \ldots \varepsilon_n \left(\sum_{i=1}^n \frac{1}{M_i} \right)$$

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$$\frac{1}{\mathbf{v}} = \varepsilon_i \varepsilon_{i+1} \dots \varepsilon_n \left(\sum_{i=1}^n \frac{1}{\mathbf{v}_i} \right)$$

with the porosity "e" is the ratio of pore volume to the total volume of media, "\(\Sigma\)" is the summation from "i" = 1 to n, and "M" is the mean flow pore diameter of the filter media layers and "v" is fluid velocity in cubic feet per minute over square feet (cfin/sq. ft.).

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